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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/514,429

07/12/2005

Robert Dwilinski

204552033800

4375

25227 7590 10/29/2008  
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EXAMINER

LOGIE, MICHAEL J

ART UNIT

PAPER NUMBER

2881

MAIL DATE

DELIVERY MODE

10/29/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/514,429	<b>Applicant(s)</b> DWILINSKI ET AL.	
	<b>Examiner</b> MICHAEL J. LOGIE	<b>Art Unit</b> 2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,8-13 and 15-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,8-13,15-24 and 26 is/are allowed.
- 6) ☒ Claim(s) 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/24/2008</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments, see "remarks" pages 7-8, filed 10 September 2008, with respect to claims 1-26 have been fully considered and are persuasive. The rejection of 10 June 2008 has been withdrawn.

### *Response to Amendment*

An "Amendment" was received on 10 September 2008, in response to Office Action of 10 June 2008. Claims 1, 8, 12, 23, 24 and 25 have been amended. Claim 14 has been canceled. Claim 26 has been newly added. Claims 1, 8-13 and 15-26 are currently pending.

## EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Laura Chung on 21 October 2008.

The application has been amended as follows:

**Claim 9:** The phosphor substrate according to claim 1, wherein said phosphor substrate has a the off-angle between 0.05 and 0.2 degree.

**Claim 25:** A phosphor substrate comprising a nitride containing at least one element selected from Group XIII (IUPAC 1989) having; a general formula XN, wherein

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X is at least one element selected from B, Al, Ga and In, a general formula  $XN:Y$ , wherein X is at least one element selected from B, Al, Ga and In, and Y is at least one element selected from Be, Mg, Ca, Sr, Ba, Zn, Cd and Hg, or a general formula  $XN:Y,Z$ , wherein X is at least one element selected from B, Al, Ga and In, and Y is at least one element selected from Be, Mg, Ca, Sr, Ba, Zn, Cd and Hg, and Z is at least one element selected from C, Si, Ge, Sn, Pb, O and S; and wherein said phosphor substrate has a the off-angle between 0.05 and 0.2 degree.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 25 is rejected under 35 U.S.C. 102(b) as being anticipated by Ban (US pgPub 2003/0001238).

In regards to claim 25, Ban teaches a phosphor substrate comprising a nitride containing at least one element selected from Group XIII (IUPAC 1989) having; a general formula  $XN$ , wherein X is at least one element selected from Ga ([0001]) and wherein said phosphor substrate has the off-angle between 0.05 and 0.2 degree ([0005], note: fig. 5).

### ***Allowable Subject Matter***

Claims 1, 8-13, 15-24 and 26 are allowed.

The phosphor substrate configuration was not found in a prior art search. The search failed to show or suggest the prior use of:

- The phosphor substrate contains alkali metals at a concentration of 0.1 ppm or more in configuration with the limitations of claims 1 and 24.
- Pertinent prior art:
  - Sarayama et al. (US patent no. 6,592,663) teach a method of making a bulk crystal substrate (for a light emitting semiconductor) of a GaN single crystal includes the steps of forming a molten flux of an alkali metal in a reaction vessel and causing a growth of a GaN single crystal from the molten flux, wherein the growth is continued while replenishing a compound containing N from a source outside the reaction vessel.
  - D'Evelyn et al. (2004/0031978) teach a light emitting device comprised of a light emitting semiconductor active region disposed on a substrate comprised of GaN having a dislocation density less than  $10^{5.5}$  per  $\text{cm}^2$  is provided.
  - Tabata et al. (JP 2002-241112 A) teach a method for manufacturing the group XIII nitride crystal, the group XIII nitride crystal having excellent crystallinity is obtained by heating a metal and/or a compound containing a group XIII element and an alkali metal amide of not less the five fold mol thereof under an ammonia

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atmosphere to bring the molten alkali metal amide into contact with the metal and/or the compound containing the group XIII element.

The following is an examiner's statement of reasons for allowance:

In regards to claim 1, prior art fails to disclose a phosphor substrate, comprising a nitride containing at least one element selected from Group XIII (IUPAC 1989) having; a general formula  $XN$ , wherein  $X$  is at least one element selected from B, Al, Ga and In, a general formula  $XN:Y$ , wherein  $X$  is at least one element selected from B, Al, Ga and In, and  $Y$  is at least one element selected from Be, Mg, Ca, Sr, Ba, Zn, Cd and Hg, or a general formula  $XN:Y,Z$ , wherein  $X$  is at least one element selected from B, Al, Ga and In,  $Y$  is at least one element selected from Be, Mg, Ca, Sr, Ba, Zn, Cd and Hg, and  $Z$  is at least one element selected from C, Si, Ge, Sn, Pb, O and S; and wherein said phosphor substrate contains alkali metals at a concentration of 0.1 ppm or more.

Claims 8-13, 15-23 and 26 are allowed by virtue of their dependencies on the independent claim 1.

In regards to claim 24, prior art fails to disclose a phosphor substrate comprising a nitride containing at least one element selected from Group XIII (IUPAC 1989) having; a general formula  $XN$ , wherein  $X$  is at least one element selected from B, Al, Ga and In, a general formula  $XN:Y$ , wherein  $X$  is at least one element selected from B, Al, Ga and In, and  $Y$  is at least one element selected from Be, Mg, Ca, Sr, Ba, Zn, Cd and Hg, or a general formula  $XN:Y,Z$ , wherein  $X$  is at least one element selected from B, Al, Ga and In, and  $Y$  is at least one element selected from Be, Mg, Ca, Sr, Ba, Zn, Cd and Hg, and

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Z is at least one element selected from C, Si, Ge, Sn, Pb, O and S; and wherein said phosphor substrate has a surface dislocation density of  $10^6/\text{cm}^2$  or less and a full width at half maximum of X-ray diffraction from a surface plane of 300 arcsec or less, and contains alkali metals at] a concentration of 0.1 ppm or more.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pertinent prior art is closely related art that individually or in combination could be considered grounds for rejection. See references cited for a listing of the pertinent prior art found and the prior art found.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL J. LOGIE whose telephone number is (571)270-1616. The examiner can normally be reached on 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. J. L./  
Examiner, Art Unit 2881

/Jack I. Berman/  
Primary Examiner, Art Unit 2881